Policy 07

MAINTENANCE RESPONSIBILITY FOR STORMWATER DRAINAGE SYSTEMS

1. Purpose

The purpose of this policy is to provide guidelines for City of Knoxville Engineering Department employees to identify, evaluate, and resolve existing drainage problems; this policy also defines maintenance responsibilities for stormwater drainage systems. The guidelines in this policy are intended to apply to existing stormwater drainage systems only; new stormwater drainage systems shall be designed as specified in other portions of this manual and in the Knoxville Stormwater and Street Ordinance.

2. Drainage Channels

For the purpose of this policy, drainage channels shall include, but are not limited to: natural or man-made drainage ditches, swales, creeks and wet or dry open culverts.

The City of Knoxville assumes responsibility for the construction, improvement and maintenance of drainage channels within the public right-of-way when it is for the clearly defined general public welfare. The City assumes no responsibility for maintenance or improvement of drainage channels on private property. Where a drainage easement exists, the City may maintain or improve drainage channels at its option when it is for the clearly defined general public welfare. Engineers and technicians of the Engineering Department are authorized to act on behalf of the City within these guidelines.

3. Storm Drains

The City of Knoxville assumes responsibility for the installation, improvement and maintenance of storm systems on the right-of-way when same is for clearly defined general public welfare. The minimum diameter of pipes installed by the City of Knoxville will be no less than fifteen inches, unless an abnormal condition exists. The City does <u>not</u> assume responsibility for the installation or improvement of storm systems on the right-of-way as follows:

- Storm drains desired by the adjacent property owner for aesthetics.
- Storm drains desired by a property owner or required by the City to allow street access or to aid development.
- Storm drains desired by an adjacent property owner as an alternative to a properly functioning existing ditch or proposed ditch.

The City of Knoxville assumes no responsibility for the maintenance, installation or improvement of pipes or stormwater systems on private property. Where a drainage easement exists, the City may maintain, install or improve a stormwater system at its option for the clearly defined general public welfare. Any installation on private property must be approved by the Engineering Director or the Public Service Director. An easement or right-of-entry must be obtained before an approved project shall commence.

Any project that requires the installation or replacement of pipes in excess of one hundred feet or requires pipes with an equivalent diameter greater than thirty six inches may be considered beyond the scope of the Public Service Department. These projects will be recommended for either the Neighborhood Drainage Program or a Capital Improvements Project (see section 9).

4. Curbing

The City of Knoxville can install asphalt curbing and asphalt rollover curbs to help correct structure flooding drainage issues. Asphalt curbing will not be installed in, but not limited to, the following situations:

- Where a drainage channel, as described in Section 2, can be installed or re-established to provide the same amount of flooding relief.
- Where the curbing will cause a safety hazard.
- Where the curbing will cause flooding issues to other properties.

Asphalt rollover curbs will not be installed in, but not limited to, the following situations:

- Along concrete or gravel driveways.
- Along gravel, dirt or grass pulloffs.
- Where the addition of the curb may cause damage to vehicles passing over it.

5. Priority of Stormwater Maintenance Activities

The order in which stormwater projects will be prioritized will be based on the date the work order was submitted to the Public Service Department as well as the type of flooding that is occurring. The four types of flooding complaints are prioritized as follows:

1. Structural flooding (of finished floor)
2. Structural flooding (other structures)
3. Roadway flooding or safety hazards
4. Non-structural flooding

The time period for completion of each work order is dependent upon many factors; including the scope of each project, availability of resources, and the total number of work orders written by the inspectors to the Public Service Department during any given period.

6. Stormwater Facilities

Stormwater facilities refer to any device designed to reduce stormwater flows or to reduce the pollutant loads in stormwater. Stormwater facilities include, but are not limited to: detention basins, retention basins, infiltration ponds, oil/water separators and grit chambers. The City of Knoxville assumes no responsibility for the maintenance, installation or improvement of stormwater facilities located on private property. Stormwater facilities located on private property are the responsibility of the property owner(s). In some cases, a neighborhood association may have legally accepted the responsibilities of the stormwater facility.

7. Storm Drainage Material Selection

Please see Policy 16, of Appendix C of this manual.

8. Design Criteria for Stormwater Improvements

Determination of stormwater flow rates within the City of Knoxville shall be in accordance with the NRCS method described in Technical Release 55 (TR-55). The use of standard well-known software programs, such as HEC-1 or HEC-HMS from the U.S. Army Corps of Engineers, is typically beneficial for most computations. Average antecedent moisture conditions (AMC II) shall be used for the calculations. NRCS methods must use 24-hour duration storm with NRCS Type II rainfall distribution for the design frequency. These rainfalls apply to the Knoxville area:

Frequency	1-year	2-year	5-year	10-year	25-year	50-year	100-year	500-year
NRCS rainfall	2.5"	3.3"	4.1"	4.8"	5.5"	6.1"	6.5"	7.6"

In selecting the design frequency storm, the following criteria will be used (listed in order as being progressively more restrictive):

- Longitudinal side drains shall be designed for a 10-year frequency flood, provided that no residential or commercial structures are flooded by a 100-year flood, except as noted below.
- Roadway cross-drains for all but arterial streets shall be designed for a 25-year frequency flood, providing that no residential or commercial structures are flooded by a 100-year flood, except as noted below.
- Roadway cross-drains for arterial streets or a higher street classification shall be designed for a 50-year flood, provided that no structures are flooded by a 100-year flood, except as noted below.
- All bridges, structures, or embankments in floodways designated as part of the Federal Flood Insurance Study shall be designed to pass a 500-year frequency flood without raising the existing 500-year flood profile.

These guidelines have been set up to provide a uniform basis for design projects; however, many retrofit projects have limitations as to the benefits that are produced by the project. Therefore, the City of Knoxville will endeavor to follow the guidelines to the maximum extent practical, both economically and physically.

9. Programs for Funding Special Drainage Projects

The City of Knoxville has two programs which may be used to fund special or large drainage projects throughout the City. Projects funded through either of these programs may include work on private property, when it is for the clearly defined general public welfare.

The first program is the Capital Improvements Projects (CIP) Program. This program is a prioritized, multi-year schedule of public infrastructure improvements, which may include drainage projects. During the fall of each year, the Engineering Department recommends projects for inclusion in the CIP Program. Projects accepted for the program will then be eligible for funding at the beginning of the next fiscal year (i.e. the following July 1).

The second program is the Neighborhood Drainage Program, which was proposed by the Mayor and approved by City Council to address pressing drainage concerns. The program currently provides $250,000 annually for the funding of drainage improvements throughout the City of Knoxville. Consideration for project inclusion in this program is based on, but is not limited to, one or more of the following:

- Total projected cost of the project
- Number of residential or commercial structures that have had floodwater damage
- Frequency of the occurrences

- Impact to adjacent and downstream properties
- Degree of flooding on adjacent streets.

Additional consideration may be given to projects when partial funding can be provided by other sources, such as federal agencies or neighborhood groups.